

4 Urinary system Sun Qingkun [9] according to the syndrome differentiation of traditional Chinese medicine to the Erzhi Wan combined with Zhibai Dihuang Wan addition and subtraction in the treatment of primary and secondary nephrotic syndrome. Zhang Kuiling [10] on the liver and kidney yin deficiency of the occult glomerulonephritis with Erzhi Wan combined with cypress soup treatment.

5 Cardiovascular system Hypertension to traditional Chinese medicine kidney manifestation is more prominent, the use of traditional Chinese medicine treatment of hypertension can effectively control blood pressure, prevention of target organ damage. Related experimental studies have also shown that Bushen Recipe can protect endothelial cells, increase vasodilator production, regulate RAAS system and water and sodium metabolism and other mechanisms of blood pressure [11].

Conclusion In summary, Bushen prescription is Ziyin Bushen, fill the essence of fine marrow prescription. Especially in the sub-health intervention and drug treatment, effective components and dosage forms of reform and other aspects of the deepening, is bound to promote the application of kidney side and research areas to further expand.

References:

[1] Du Jianpeng and Chen Zetao, Yiqihuoxue method to improve microcirculation experimental study[J]. Chinese Journal of Experimental Prescription, 2006 (09): 31-35.

[2] Long Xiangyang and Xu Wujun, Zuo Guiwan treatment of semen abnormal male infertility in 50 cases of clinical research[J]. Asia Pacific Traditional Medicine, 2016 (17): 154-155.

[3] Zheng Zi'a and Wen Xiaojing. Review of Clinical Application and Experimental Studies of Zuogui Pill[J]. Chinese Archives of Traditional Chinese Medicine, 2014(1):58-60.

[4] Ma Shujuan and Yao Jianping, The influence of Zuogui Wan on HPA axis function of depression model rats[J]. Chinese Journal of Clinical Research, 2016 (19): 15-17.

[5] Cheng Jinhua, New Progress in Clinical Application of Liuwei Dihuang Wan[J], Journal of Practical Traditional Chinese Internal Medicine, 2013:27(137-138).

[6] Gao Min, Clinical Study on Treatment of Parkinson 's Disease with Liver - Kidney Yin Deficiency by Bushen Yanggan Recipe[J]. World Latest Medicine Information, 2015(15):127-128.

[7] Jiang Tianjiao, Chinese medicine Zuogui pill combined with vitamin D calcium phosphate tablets in the treatment of osteoporosis treatment[J]. Journal of Clinical Pharmacology, 2011,4 (4A): 54.

[8] Li Dijin, Effect of Zuoguo Pill and Western Medicine on adult height of young girls with late youth[J]. Zhejiang Journal of Traditional Chinese Medicine, 2009,44 (11): 813.

[9] Sun Qingkun, Chinese and Western medicine treatment of primary nephrotic syndrome in 36 cases of observation[J]. Yunnan Traditional Chinese Medicine Journal, 2010,31 (10): 18 -19.

[10] Zhang Kuiling, Chinese and Western medicine treatment of occult glomerulonephritis in 40 cases[J]. Chinese Medicine Guide, 2011,9 (12): 131 -132.

[11] Yang Xiaochen, Application of kidney-nourishing herbal medicine for treating hypertension[J]. China Journal of Chinese Nat- ural Medicine, 2013,38(23):4015-4019.

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STUDY ON COMPATIBILITY RULE OF COMPOUND PRESCRIPTION OF RHUBARB AND ACONITE DECOCTION BASED ON CYP450

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Objective: The study was based on the theory of metabolic drug interactions mediated by cytochrome P450, was to research the mechanism that monkshood toxicity reducing and then to clarify law of compatibility of medicines in Rhubarb and Aconite Decoction.

Methods: Rats were randomly divided into eight groups: Rhubarb group; Monkshood group; Asarum group; Rhubarb + Monkshood group; Rhubarb + Asarum group; Monkshood + Asarum group; Rhubarb and Aconite Decoction group and blank control group. Development and utilization the HPLC method for simultaneous determination the concentrations of caffeine (CYP1A2 enzyme substrates) and midazolam (CYP3A4 enzyme substrates) in liver microsomes. Using calcium chloride precipitation method to obtain liver microsomes. The CYP1A2 and CYP3A4 enzyme activity was quantified by Cocktail method in vitro. All samples (20 μ L) were separated on a Diamonsil C18 reversed-phase column (150mm \times 4.6mm, 5 mm) by HPLC system. The mobile phase consisted of methyl alcohol and Diammonium phosphate buffer solution (51:49 V/V) at a flow rate was 0.8 mL/min. The separation was carried out at 35 $^{\circ}$ C. UV detection wavelength was 254nm. Specificity, sensitivity, accuracy and stability of the method met the requirements of biological sample measurement.

Results: Rhubarb 、Rhubarb + Monkshood 、Rhubarb + Asarum group could induce the enzyme activity of CYP1A2 significantly ($p < 0.05$, $p < 0.05$, $p < 0.05$) . Monkshood + Asarum group could inhibit the enzyme activity significantly ($p < 0.05$) . Rhubarb and Aconite Decoction group could induce enzyme activity of CYP1A2 slightly, but the effects was no statistically significant. Monkshood group and Asarum group showed no effects on enzyme activity of CYP1A2.

Asarum and Monkshood + Asarum group could inhibit the enzyme activity of CYP3A4 ($p < 0.05$, $p < 0.05$) . Rhubarb、Rhubarb + Asarum and Rhubarb and Aconite Decoction group could induce the enzyme activity of CYP3A4

significantly ($p < 0.01$, $p < 0.05$, $p < 0.05$). Monkshood and Rhubarb + Monkshood group showed no effects on the enzyme activity of CYP3A4.

Conclusions: CYP1A2 and CYP3A4 were mainly involved in the metabolic of aconitine which is the main toxic ingredients in Monkshood. The results from the present study suggested that Rhubarb make a contribution to induction of CYP1A2 and CYP3A4 in Rhubarb and Aconite Decoction. This could reduce toxicity of Rhubarb and Aconite Decoction. It shows that Rhubarb as monarch drug in a prescription was importance. In addition, Rhubarb and Aconite Decoction prescription could weaken the strong induction of CYP1A2 and CYP3A4 caused by Rhubarb. It suggested that overall concept of traditional Chinese medicine compound. However, further research is needed to understand the relationship between properties theory of Chinese medicinal Herbs and CYP450 enzyme.

Key words: CYP450 isoenzymes ; Rhubarb and Aconite decoction ; Compatibility of Medicines in prescriptions ; metabolic drug interactions

Reference

- [1] Nebert DW, Russell DW. Clinical importance of the cytochromes P450. *Lancet*[J]. 2002;360(9340):1155–62.
- [2] Testa B, Pedretti A, Vistoli G. Reactions and enzymes in the metabolism of drugs and other xenobiotics . *Drug Discov Today*[J]. 2012;17(11–12):549–60.
- [3] Nebert, D.W., Russell, D.W., Clinical importance of the cytochromes P450[J]. 2002, *Lancet*, 360(9340), 1155–1162.
- [4] Hao haiping, Zheng Chaonan, Wang Guangji. Thoughts and experimental exploration on pharmacokinetic study of herbal medicines with multiple-components and targets[J]. *Acta Pharmaceutica Sinica* 2009, 44 (3): 270–275
- [5] Laurence Brunton, Bruce Chabner, Bjorn Knollman. Goodman & Gilman's: The Pharmacological Basis of Therapeutics[M]. 12th edition. New York, 71–91.
- [6] Pelkonen, O., Turpeinen, M., Hakkola, J., et al. Inhibition and induction of human cytochrome P450 enzymes: current status[J]. *Arch. Toxicol.*, 2008. 82(10), 667-715.
- [7] Zhou Honghao. Pharmacogenetics[M]. People's military medical press, 2003:53-54.
- [8] Rong Wang, Yuhuan Sun, Qiang Yin, et al. The effects of metronidazole on Cytochrome P450 Activity and Expression in rats after acute exposure to high altitude of 4300 m[J]. *Biomedicine & Pharmacotherapy*, 2017, 85: 296–302.
- [9] Wang Riuling, Wang Xianfa, et al. Poisoning causes and treatment methods of Radix Aconiti and Aconitum[J]. *Chinese Pharmaceutical Journal*, 2001, 36(5):352-353.

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EFFECTS OF TRANSCRANIAL DIRECT CURRENT STIMULATION FOR SHORT-TERM SPATIAL MEMORY IN HEALTHY PEOPLE

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Abstract Transcranial direct current stimulation (tDCS) is one of the techniques of non-invasive brain stimulation. Over 50 years ago, it was shown that a slight impact on a subthreshold direct current cortex animals leads to a change in the activity of the cortical neurons that lasts a certain period of time and on completion of exposure. Similar effects can be achieved by noninvasive stimulation of human brain. Apparently, the primary mechanism of this phenomenon is the subthreshold membrane potential changes, while aftereffect synaptic plasticity is associated with glutamatergic synapses.

Key words: tDCS, transcranial direct current stimulation, brain, spatial memory.

Spatial memory is a critical skill for all people. According to the data available, the process of working spatial memory can be divided into three successive stages: 1) treatment facility; 2) processing of its spatial location and 3) object processing in the context of its place. Spatial processing of the object can be done by means of two approaches: coordinate and categorical. It has been shown, morphological substrate of these actions is the posterior parietal cortex of the left and right hemispheres of the brain, respectively. This functional magnetic resonance imaging and studies use of non-invasive methods of brain stimulation confirms the existence of this asymmetry in the spatial memory. As described in the introduction of the work analyzed morphological substrate categorical and coordinates processing of spatial information, however, not their influence on spatial memory. In the first initially, a similar study was conducted by Heather et al, which that demonstrated the ability of transcranial brain stimulation constant direct current of 2 mA power to change certain types of spatial memory, depending on the stimulation area. In connection with these in this regard, we have assumed that lower amperage, part of the range of 0.5-2 mA exerts influence on certain types of spatial memory, using the standard arrangement of electrodes in the points P3- P4 + and P3 + P4-.

Materials and methods 18 volunteers participated in the experiment. To study were taken 18 healthy volunteers, 10 men and 8 women, aged 18 to 23. All the subjects of the study appropriate the following criteria match the following criteria: (1) do not take medications that affect the central nervous system; (2) showed no abnormalities in conventional medical and neurological examination; (3) are right-handed; (4) had no signs of dementia; (5) did not show any sign of depression; (6) showed no sign of alarm.

The experiment used the point of stimulation P3 and P4 on the International 10-20 EEG system. These points